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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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CHECK LIST REVISION

Freeman Weiss

BAPTISIA (LEGUMINOSAE)

BAPTISIA SPP., WILD INDIGO. Perennial herbs of the Eastern and Southern States; of food value to wild life, and sometimes grown for ornament in wild gardens.

Anthostomella baptisiae (Cke.) Sacc., on stems of B. perfoliata (L.) R.Br., S.Car.

Leptosphaeria coniothyrium (Fckl.) Sacc., on B. lanceolata Walt., Ga.

Cercospora velutina Ell. & Kell., leaf spot. On B. australis R.Br., Kans.; B. bracteata (Muhl.) Ell., Wis.; B. leucantha Torr. & Gray, Ill., Wis.

Coniothyrium baptisiae (Thuem.) Tassi, on stems of B. perfoliata, S.Car. Sphaeropsis b. Thuem. and Haplosporella b. Petr. & Syd. are probably the same.

Diaporthe arctii (Lasch) Nits. (D. baptisiae Rehm), on stems of B. tinctoria, N.J. ? D. genistae Rehm.

Erysiphe polygoni DC., powdery mildew. Frequent on all the listed spp.

Marssonina baptisiae (Ell. & Ev.) Magn.; leaf spot. On B. leucantha, Iowa. See Stagonospora baptisiae.

Microsphaera alni DC. ex Wint., powdery mildew. On B. bracteata, Wis.

Mycosphaerella sp. (Sphaerella leucophaeae Ell. & Kell.), on leaves of B. bracteata, Kans.

M. baptisiicola (Cke.) Earle. On dead stems of B. leucantha, S.Car.; B. tinctoria, N.J., S.Car.

M. granulata (Ell. & Ev.) Lindau. On stems of B. tinctoria, N.J.

Phoma baptisiae P. Henn., on stems of B. australis, S.Car. P. baptisiae Cke. on B. perfoliata is older but appears to be a nomen nudum.

Physalospora obtusa (Schw.) Cke., on stems. Ga.

Puccinia andropogonis Schw. var. onobrychidis (Burr.) Arth. (O,I), rust. On B. australis, Kans., Okla.; B. leucophaea, Kans., Nebr.; B. tinctoria, N.Car.

Septoria baptisiae Cke., leaf spot. On B. perfoliata, S.Car.

Stagonospora baptisiae (Ell. & Ev.) J.J.Davis, leaf spot. On B. leucantha, Wis. Ascochyta b. J.J.Davis and probably Marssonina b. are the same.

CAJANUS (LEGUMINOSAE)

CAJANUS CAJAN (L.) Millsp., PIGEON-PEA. Small shrub of Old World tropics, grown in warm regions for edible seeds, also for forage and as a cover crop.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Hawaii.

CAJANUS cont.

Alternaria brassicae (Berk.) Sacc. f. phaseoli Brun., leaf spot. Tex.
Botryosphaeria xanthocephala (Syd. & Butl.) Theiss. & Syd., on dead stems. P.R.
Cephaleuros virescens O. Kunze, green scurf. P.R.
Cercospora cajani P.Henn. (Mycovellosiella cajani (P.Henn.) Rangel), leaf spot. P.R.
C. instabilis Rangel, leaf spot. P.R.
Colletotrichum cajani Rangel, anthracnose. P.R. The following records also may belong here: C. lindemuthianum (Sacc. & Magn.) Briosi & Cav., on stems in Fla., and Gloeosporium sp., on pods in Fla. and P.R.
Corticium salmonicolor Berk. & Br., pink scurf. P.R.
Diplodia cacaolicola P.Henn. = Physalospora rhodina (Berk. & Curt.) Cke., stem rot. Fla., P.R.
Heterodera marioni (Cornu) Goodey, root knot. Calif., Fla., Hawaii. Resistant.
Macrophomina phaseoli (Maub.) Ashby, charcoal rot. Calif.
Nectria grammicospora Ferd. & Winge, on stems. Fla., P.R., Virgin Is.
Phoma cajani Rangel, on pods. P.R.
Phyllosticta cajani Rangel, leaf and pod spot. Fla., Canal Zone, P.R.
Phymatotrichum omnivorium (Shear) Dug., root rot. Tex.
Rhizoctonia sp., stem rot. Hawaii.
R. ferrugena Matz, seedling blight. P.R.
Rotylenchus similis (Cobb) Filip., root nematode. Hawaii.
Sclerotium rolfsii Sacc., root and stem rot. Hawaii, P.R.
Thyronectria megalospora (Speg.) Seaver & Chardon, on stems. P.R.
Uromyces dolicholi Arth. (II,III), rust. Fla., Tex., P.R. O and I unknown.

CANAVALIA (LEGUMINOSAE)

CANAVALIA ENSIFORMIS DC., JACK-BEAN (1). Trailing or twining herb of tropical regions, grown for ornament, sometimes also for forage in the far South and West Indies. C. GLADIATA (Jacq.) DC., SWORD-BEAN (2), is grown chiefly for ornament.

Cercospora canavaliae Syd., leaf spot. P.R.
C. ternateae Petch, leaf spot. Ala.
Cerotelium canavaliae Arth. (II,III), rust. P.R. (1,2). O and I unknown.
Colletotrichum canavaliae Frag. & Cif., pod spot. P.R. (1)
Fusicoccum canavaliae Lyon, secondary stem spot. Hawaii (1)
Gloeosporium canavaliae Lyon, stem canker, dieback. Hawaii (1)
Heterodera marioni (Cornu) Goodey, root knot. ? Fla. (1), Hawaii (1, 2). Very resistant.
Nectria confluens Seaver, on pods. P.R. (2)
Septoria canavaliae Lyon, leaf spot. Hawaii (1)

CANAVALIA cont.

Vermicularia sp., on pods, secondary pod spot. V. capsici reported in Fla., V. polytricha Cke. in Ala. (1)

Mosaic -- unidentified virus. Guam. Also reported in Bermuda.

CASSIA (LEGUMINOSAE)

CASSIA spp., SENNA. A large group of diverse habit, origin and utility. For convenience here placed in 3 divisions -- (a) medicinal, (b) ornamental, (c) native herbaceous spp.

(a). Medicinal

C. ACUTIFOLIA Del., ALEXANDRIA SENNA (1), small shrub of Egypt, and C. FISTULA L., GOLDEN-SHOWER (2), small tree of India, the former furnishing senna leaves, the latter cassia pods, used in medicine; especially the latter established or sometimes cult in tropical America. C. ALATA L., RINGWORM S. (3), small tropical shrub, reputed to possess medicinal properties.

Asterina elaeocarpi Syd., black mildew. P.R. (3)
Cercospora nigricans Cke., leaf spot. Miss. (1)
C. simulata Ell. & Ev., leaf spot. P.R. (3)
Microsphaera alni DC. ex Wint., powdery mildew. Md. (1)
Phyllachora canafistulae F.L.Stevens & Dalbey, tar spot. P.R. (2)
Uredo lutea Arth. II, rust. P.R. (On Chamaefistula antillana Britt. & Rose)

(b). Ornamental

C. ARTEMISIOIDES Gaud., WORMWOOD SENNA (1), Australian shrub, grown for ornament in Calif. and Tex. C. CORYMBOSA Lam., FLOWERY S. (2), S. American shrub, grown under glass, or in the open and sometimes naturalized in the far South. C. GRANDIS L.f., PINK-SHOWER (3), tropical American ornamental tree. C. NODOSA Buch-Ham. ex Roxb., JOINTWOOD (4), Asiatic tree introduced into tropical America.

Clitocybe tabescens (Scop. ex Fr.) Bres., root rot. Fla. (4).
Diplodia natalensis Pole-Evans (= Physalospora rhodina (Berk. & Curt.) Cke.), dieback. Tex. (1)
Heterodera marioni (Cornu) Goodey, rootknot. Tex. (1), Calif. (2)
Phyllachora canafistulae F.L.Stevens & Dalbey, tar spot. P.R. (3,4)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1)
Physalospora fusca N.E.Stevens and P. rhodina (Berk. & Curt.) Cke., on dead branches of Cassia sp. Fla., Miss.

(c). Native herbaceous Cassia spp.

C. BAUHINIOIDES A. Gray (1), and C. MARILANDICA L., WILD SENNA (2). Perennials of plains and open ground,(1) in the Southwest, (2) eastward to Fla. and Conn. C. OCCIDENTALIS L., COFFEE S. (3), and C. TORA L., SICKLE S. (4). Weedy annuals of tropical America and the Southern States; furnish ground cover and are of food value to wildlife.

CASSIA spp. cont.

Cercospora atromaculans Ell. & Ev., leaf spot. Ala., La. (4)
C. nigricans Cke. Fla., Mo., S.Car. (4)
C. occidentalis Cke. Ala., Md., (2); S.Car. to Fla. and Tex. (3)
C. simulata Ell. & Ev. Mass. to Ark. and Wis. (2); P.R. (3)
C. torae Tharp. Tex. (4)
Diaporthe arctii (Lasch) Nits., on dead stems. N.Y. (2)
Erysiphe polygoni DC., powdery mildew. Fla., Md. (4); P.R. (3,4)
Heterodera marioni (Cornu) Goodey, root knot. Ala., Fla., S.Car. (4); Ga., Hawaii (3,4).
Fusarium oxysporum Schlecht. em. Snyder & Hansen f. vasinfectum (Atk.) Snyder & Hansen, wilt. S.Car.
Leptosphaeria cassiaecola Ell. & Ev., on dead stems of Cassia sp. Tex.
Leptothyrium cassiicola Dearn. & House, N.Y. (2)
Macrophomina phaseoli (Maub.) Ashby, charcoal rot. Ga. (3)
Phoma cassiae Sacc., on stems. S.Car. (3), Fla. (4)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (2,4)
Pleospora cassiae Ell. & Ev., on dead stems of Cassia sp. Tex.
Pratylenchus pratensis (DeMan) Filip., in roots. Hawaii (3)
Ravenelia mesillana Ell. & Barth. (0,I,II,III), rust. N.Mex., Tex. (1). Other Ravenelia spp. on Cassia are: R. cassiae-covesii Long. & Goodding in Ariz., R. papillifera Syd. in Tex. and R. portoricensis Arth. in P.R.
Rhizoctonia solani Kuehn, seedling blight. Fla. (4)

CENTROSEMA (LEGUMINOSAE)

CENTROSEMA PUBESCENS Benth. (1), C. VIRGINIANA Benth. (2), BUTTERFLY-PEA. Herbaceous vines, (1) limited to tropical America, (2) also in the U.S. to N.J. and Tex.; of food value to wildlife, (1) also grown for ornament.

Cercospora bradburyae E. Young, leaf spot. P.R. (1)
C. clitoriae Atk., Ala. (2)
Colletotrichum sp., on pods. Ala. (2)
Meliola bicornis Wint., black mildew. P.R. (1,2)
Phyllachora galactiae Earle ex Seaver, tar spot. P.R. (2)

Mosaic -- unidentified virus. P.R. (2)

CHAMAECRISTA (LEGUMINOSAE)

CHAMAECRISTA FASCICULATA (Michx.) Greene, SHOWY PARTRIDGE-PEA (1) C. PROCUMBENS (L.) Greene, SENSITIVE P. (2). Annuals occurring in dry soil in the Eastern and Southern States, and southward; used in soil erosion control.

Aecidium chamaecristae Arth (0,I), rust. Kans., Nebr. (1)
Cercospora chamaecristae Ell. & Kell. (? C. simulata Ell. & Ev.), leaf spot. Kans., Nebr. (1)
C. pinnulaecola Atk., leaf spot. Ala. (2)

CHAMAECRISTA cont.
Diaporthe arctii (Lasch) Nits., on stems. Ga. (1)
Erysiphe polygoni DC., powdery mildew. Miss. (1)
Glomerella cingulata (Ston.) Spauld. & Schrenk., anthracnose, dieback. Ala. (1), Ga. (1,2).
Macrophomina phaseoli (Maub.) Ashby, root and stem rot. Ala. (2)
Meliola chamaecristae Earle, black mildew. P.R.
Phomopsis sp., dieback. S.Car.
Phyllosticta cassiaecola Kell. & Swing., leaf spot. Kans.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1,2)
Ravenelia cassiaecola Atk. (II,III), rust. Fla., Ga., La., Miss. Ohio, P.R. (1); Ala., Miss. (2)
Septoria cassiaecola Kell. & Swing., leaf spot. Kans., Wis.

CICER (LEGUMINOSAE)

CICER ARIETINUM L., CHICK-PEA, GARBANZO. Annual herb of western Asia, cult. in tropical America, occasionally in Calif., for edible seeds.

Heterodera marioni (Cornu) Goodey, root knot. ? Fla.
Mycosphaerella sp., stem necrosis. Ala.
Pythium ultimum Trow, root rot. Calif.
Rhizoctonia solani Kuehn, root and stem rot. Calif.

Mosaic -- unidentified virus. Calif.

CLITORIA (LEGUMINOSAE)

CLITORIA CAJANIFOLIA (Presl) Benth. (1), C. MARIANA L. (2), and C. TERNATEA L. (3), BUTTERFLY-PEA, PIGEON WINGS. Twining herbs of tropical regions; (3) and occasionally (2) grown for ornament, (1) as a cover crop.

Cercospora clitoriae Atk., leaf spot. Ala. (2); Fla., P.R. (3)
C. cruenta Sacc., leaf spot. Fla. (3)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (2)
Uromyces neurocarpi Diet. (II,III), rust. P.R. (1)

CORONILLA (LEGUMINOSAE)

CORONILLA VARIA L., CROWN-VETCH. Trailing herb of Europe, sometimes grown for ornament and naturalized in the Northeastern States. Several other spp. are cult. as ornamentals.

Heterodera marioni (Cornu) Goodey, root knot. Va.

CROTALARIA (LEGUMINOSAE)

CROTALARIA spp. Mostly coarse herbs or low shrubs of tropical regions; grown in warm countries, and recently in the U.S., as soil-building and cover crops, especially C. INTERMEDIA Kotschy (1), C.

CROTALARIA cont.

MUCRONATA Desv. (2), and C. SPECTABILIS Roth (3). C. JUNCEA L., SUNN-HEMP (4), produces fiber; C. RETUSA L. (5) is naturalized in Fla. and tropical America, and is sometimes grown for ornament. C. SAGITTALIS L., RATTLEBOX (6), occurring from New England to Fla., Tex. and S.Dak., is of food-value to wildlife.

Alternaria sp., secondary leaf and pod spot. Fla., Tex. (3)

Botrytis cinerea Pers., leaf spot, blight. Fla. (3), N.Car. (1,3)

Cercospora sp. (? C. crotalariae Sacc.), leaf spot. Fla., La., Miss., N.Car. (3)

C. demetrioniana Wint., leaf spot. Del., Mo. (6); La. (sp.)

Chaetopyrena sp., on leaves. La. (sp.)

Clitocybe tabescens (Scop. ex Fr.) Bres., root rot. Fla. (2).

Diaporthe crotalariae Weber, stem canker. Fla. (3)

Erysiphe polygoni DC., powdery mildew. Fla. (3)

Fusarium sp., wilt, root rot. Fla. (1); La., Miss., Okla. (3); N. Car. (1,3), Ga., Tex. (5). The wilt pathogen in N.Car. has been identified as F. oxysporum Schlecht. em. Snyder & Hansen f. tracheiphilum (E.F.Sm.) Snyder & Hansen. A similar form was associated with root rot in Fla.

Helminthosporium sp. on pods. Fla. (3)

Heterodera marioni (Cornu) Goodey, root knot. ? Fla. (2,4) resistant. Also on C. saltiana Andr. in Hawaii but C. spectabilis appears to be immune.

Macrophomina phaseoli (Maub.) Ashby, charcoal rot, stem canker. Fla. (1,3); Okla., Tex. (3)

Microsphaera diffusa Cke. & Pk., powdery mildew. Va. (1,4), P.R. (5), Md. (sp.).

Neocosmospora vasinfecta E.F.Sm., on dead stems. Ga. (5)

Oidium erysiphoides Fr. var. crotalariae Cif. & Frag., powdery mildew. Fla. (5); La., Miss. (3). Not a true Oidium.

Parodiella perisporioides (Berk. & Curt.) Speg., surface mildew. P.R. (5), Fla. (sp.)

Pellicularia filamentosa (Pat.) Rogers (Rhizoctonia solani Kuehn), stem spot. Fla. (1); La., Miss. (3). Also on C. incana L. in S.Car.

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1,2,3)

Phoma sp., leaf spot. On C. sagittalis L., Mont.

Pyrenochaete sp., secondary leaf spot. La., Miss. (3)

Rhizoctonia sp., stem canker. Fla. (1), La. (3)

R. solani Kuehn. See Pellicularia filamentosa.

Sclerotium rolfsii Sacc., root and stem rot. Fla. (1,2,3); Miss., N.Car. (3). On Crotalaria spp. throughout the Southern States.

Stemphylium sp., on stems of C. verrucosa L. S.Car.

Bronzing -- magnesium deficiency. Fla.

Mosaic -- unidentified virus(es). N.Car., Tex. (3); Va. (1,2,3, and also C. incana L., C. lanceolata Klotsch, C. maxillaris Klotsch, and C. usaramoensis Baker); P.R. (2, and also C. anagyroides H.B.K. and C. usaramoensis)

CYAMOPSIS (LEGUMINOSAE)

CYAMOPSIS TETRAGONOLOBA (L.) Taub., GUAR.

Alternaria sp., leaf spot, ? secondary. Calif.
Fusarium sp., wilt. Ariz., Okla., Tex.
Heterodera marioni (Cornu) Goodey, root knot. Calif., ? Fla.
Resistant.
Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Tex.
Sclerotium rolfsii Sacc., root and stem rot. Ariz., Tex.

Mosaic -- unidentified virus. Ariz.
Streak-(? mosaic) -- unidentified virus. Okla.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

HOW ACCURATELY ARE WE ESTIMATING PLANT DISEASE LOSSES?

K. Starr Chester

Under this title, in an earlier number of the "Plant Disease Reporter" (Vol. 29, pages 503-504), there appeared a "Quiz" in which were described a number of disease occurrences such as a survey worker might encounter, and an invitation for pathologists to estimate the amount of crop loss that might be expected in each case. In a later number of the "Reporter" (Vol. 29, page 539) appeared the measured amounts of crop loss in each case, with references to the publications furnishing the data. Some thirty-five answers to the "Quiz" were received before the correct answers had been published. The cooperation of the pathologists who furnished these is gratefully acknowledged.

Table 1 summarizes the replies. One is first impressed with the width of range of replies to any given question, so wide that they might more properly be called "guesses" rather than "estimates" despite the suggestion that those answering the "Quiz" limit their answers to diseases with which they were familiar. In spite of the commonness of the disease and several papers reporting well-conducted experiments in which the average yield from a smutted corn stalk is shown to be about 2/3 the yield of a normal stalk, the replies in this case ranged from 1.% loss to 60.% loss, and nearly as wide ranges were obtained for the potato virus diseases, tobacco mosaic, tomato Septoria, and other defoliation diseases.

The averages of replies indicate that there was no general tendency to overestimate nor to underestimate, although there were very serious over - or underestimates for certain diseases, evidently for psychological reasons. The most marked overestimates were for diseases of a more or less spectacular nature, which have been well publicized, e.g. sugarcane mosaic and cotton root rot, while the most serious underestimate was of a disease that is universal and produces no striking symptoms, latent mosaic of potato. The number of cases of average overestimates almost exactly equalled the number of cases of average underestimates.

Table 1. Summary of replies to disease-loss estimation quiz

Disease situation	Measured % loss	Estimated loss %		
		Average	Range	Mean % deviation
(a) What would be the approximate loss from 100% infection of potatoes with:				
Leafroll___%	56.	36.25	5.-75.	23.6
Latent mosaic (virus X)___%	22.5	7.60	0.-20.	14.9
Mild mosaic___%	24.	15.17	1.-30.	11.3
Rugose mosaic___%	54.	62.31	20.-90.	20.2
Spindle tuber___%	43.	56.83	20.-85.	19.
(b) When tomato plants become infected with mosaic 1 month after setting in the field, what is the approximate yield reduction per infected plant? ___%	43.	36.25	10.-60.	18.
(c) If tobacco contracts mosaic 3 weeks after setting, what is the average loss				
in yield___%	30.	44.38	20.-90.	19.4
and in value___%	45.	41.75	40.-99.	16.2
(d) A survey of an important pea producing State showed that in 3 fields out of 10, Aphanomyces root rot was moderate to severe (5 to 100% of plants with some degree of root infection). What was average crop loss in these fields?	25-30	28.20	10.-55.	6.8
(e) If leaf rust completes destruction of all wheat leaves at blossoming time, to what extent will potential crop be reduced?___%	34.	40.71	15.-75.	13.7
(f) What do you estimate loss in average infected plants with corn smut (average all types and locations of boils)?___%	32.	19.62	1.-60.	19.4
Severe early Septoria leaf spot of tomato?___%	27.5	44.17	10.-90.	22.5
Sugar cane mosaic ___%	15.6	35.00	15.-60.	19.6
(g) Samples of threshed wheat grading "medium smutty" contain 5-10 smut balls per 50 gm. What percent of smut in field is required, with average threshing, to produce this many smut balls?___%	8.	4.64	.5-15.	5.3

Disease situation	Measured % loss	Estimated loss % Average	Range	Mean % deviation
(h) In a clover field Macrosporium leaf spot is affecting 45% of the leaves, the lesions involving 36 % of the total leaf area. What is loss in hay tonnage?___%	11.	18.64	2.-60	10.7
(i) What will be the % crop loss from destruction of: 1/3 of leaves of corn when 40% of tassels are showing?___%	30.	29.36	8.-75	17.9
1/2 of leaves of onion 3 weeks before harvest?___%	34.	28.70	5.-50.	14.1
All flax leaves between bud-soft dough stage?___%	30.	41.67	5.-80.	26.7
(j) In a cotton field, 20% of plants were killed (andproportionate number of others infected) with cotton root rot at picking time. What was yield reduction?___%	10.	26.	15.-45.	16.

The last column of the table gives the mean deviations of the estimates from the measured loss values, and shows that for these 19 disease situations the average worker estimated the loss from 5 to 27 percent too high or too low. The over-all mean deviation for all questions is 16.6%, the amount by which the average worker over- or underestimated the loss from the average disease.

These results bring out with extraordinary emphasis our need for a more rational basis of disease loss appraisal. Our science finds its justification in our efforts to avert crop losses. We must deal with many practical problems that hinge on a knowledge of the extent of these losses, e.g. determination of whether the cost of a disease warrants the cost of its control on the farm or through restriction of agricultural exchange, selection of the most deserving areas for research and extension work, and pathological-economic potentialities of future agricultural operations and systems as in connection with the cultivation of new crops or with irrigation projects. Clearly we are faced with an obligation to develop this neglected phase of phytopathology, both through attention to crop loss measurement in comprehensive studies of individual diseases, and through formal cooperative efforts to secure and organize a broad basis of information and procedures for accurate appraisal of plant disease losses.

This thesis is developed in detail in a paper to appear in a forthcoming number of "Chronica Botanica".

OKLAHOMA AGRICULTURAL
EXPERIMENT STATION

TOBACCO DISEASES IN KENTUCKY IN 1945

W. D. Valleau, E. M. Johnson, and Stephen Diachun

Blue Mold. Following a period of several years with little or no blue mold [Peronospora tabacina], the disease became general and destructive in tobacco beds over the State. Because blue mold appeared to have entirely disappeared from Kentucky and Tennessee in 1944, the 1945 outbreak in these States probably originated from spores blown in from the Carolinas. It appeared more than two weeks earlier than in 1937 and extended over a longer period because many beds were late. The result was that plants were not always plentiful, and the setting season was prolonged much more than it would have been if beds had not been set back by the disease. Nevertheless, a large crop was set out. Growers in Kentucky are not prepared to spray or gas and, therefore, could only resort to cultural practices such as removing the cotton when the disease first appeared. Where this was done in time the disease was usually less injurious than where the cotton was left on until the disease was severe. Recovery of plants was aided greatly by application of ammonium nitrate or nitrate of soda.

Wildfire and Angular Leaf Spot. These diseases [Pseudomonas tabaci, P. angulata] were not more prevalent in plant beds than usual, although the plant-bed season was wet. Growers who sprinkled bordeaux mixture on their beds while the plants were small usually had no infection whatever in the plant bed. Considerable infection originated in the field in early tobacco after the crop was set. One field on the Station farm at Lexington was set May 15 from plants raised in tumblers in the greenhouse, in sterilized soil. Following setting the season was wet, and heavy infection of wildfire and angular leaf spot developed throughout this planting. A later planting of the same variety in adjacent rows, from field-grown plants, developed little wildfire or angular leaf spot. In farm plantings, although field infection was rather common, wildfire did not cause extensive field injury, because the latter part of the summer was dry.

Cold Injury. Cold injury resulting in narrow, chlorotic leaves in the growing point of plants in the bed was quite general over the State from cold weather in late April. Effects of cold injury were still evident in plant beds as late as May 17.

Black Root Rot. Because of the cool, wet spring and the unusually cold summer, black root rot [Thielaviopsis basicola] caused extensive losses in the State in spite of the fact that resistant varieties of good quality and high yielding ability were available for use. Although we have no detailed figures, it is probable that about half of the burley tobacco grown in the State was resistant, while the other half was one or another of the old susceptible varieties. There appeared to be a turn-back to the susceptible varieties in parts of the State following the large, late, poor-quality crop of 1944, in the hope that the old varieties might give better quality tobacco. This idea was fostered by commercial seedsmen who make a business of selling the susceptible vari-

eties. There were numerous fields in the State that were not harvested because of root rot. There were many unplanned demonstrations where a farmer who was growing a susceptible variety ran out of plants and happened to get plants of a resistant variety. The result frequently was that at harvest time the resistant variety had made a normal crop, whereas the susceptible variety had hardly started into growth. August was dry, so that the diseased crops could not recover. We have estimated that the loss from black root rot in the State was not far from [illegible] $15,000,000. Growers are now very conscious of the disease, and there should be a big turn to resistant varieties in 1946.

Growers of certified root-rot-resistant seed produced slightly more than 90 acres of seed in 1944 and marketed nearly all of it for the 1945 crop. In 1945 they produced 45 acres of Ky. 16, 51 acres of Ky. 41A, and 3 acres of Ky. 33, the latter a fusarium wilt- and black-root-rot-resistant variety. In addition some seedsmen produced uncertified seed crops of Ky. 19, Ky. 22, Ky. 34, and Ky. 52. Ky. 34 is resistant to black root rot, fusarium wilt, and mosaic (NN), and Ky. 52 is resistant to black root rot and mosaic (NN). The plantings of these (NN) varieties are usually free from any form of injury from the tobacco mosaic virus. Only one plant of Ky. 34 that had died of systemic necrotic mosaic has ever been reported from commercial plantings.

In many beds black root rot delayed setting because of extensive yellowing and stunting of plants. Because earlier these beds had suffered from an attack of blue mold, growers attributed the damage entirely to blue mold; however they were at a loss to explain why their plants failed to recover as had those of their neighbors following application of nitrate of soda.

Fusarium Wilt. This disease [Fusarium oxysporum f. nicotianae] appears to be on the increase. Fifteen or twenty years ago the disease was almost never found. Now it is reported from all parts of the state in burley and one-sucker tobacco but not in dark fire-cured and dark air-cured varieties. Ky. 33 and Ky. 34 are being grown successfully in infested fields.

Black Shank. A new outbreak of this disease occurred on three farms in Owsley County, near Sturgeon, and in one planting in south Christian County. Observations in the Georgetown area where burley tobacco is grown year after year in infested fields have indicated that the disease is not likely to become serious in central Kentucky, possibly because the average summer temperature is about four or five degrees below the optimum as determined in Florida and elsewhere. It is difficult to explain new outbreaks on the basis of the fungus having been brought in from other infested areas. The strains of the fungus capable of attacking tobacco in various parts of the world have evidently had independent origin from Phytophthora parasitica. It is possible that new outbreaks, in widely scattered areas, can best be explained by infection from P. parasitica growing on some other plant.

Mosaic. It is almost impossible to compare the amount of mosaic [virus] one year with another without elaborate survey studies. The disease is usually severe where much hired help is used. Trisodium phos-

phate (concentrated solution) is being used successfully by some large growers at weeding, pulling, and setting time to reduce the amount of initial infection, and without injury to the skin of the workers. On one large farm where tobacco growing is being mechanized as much as possible, tractor-drawn cultivators equipped with shields to prevent covering the small plants were suspected of being the means of spreading mosaic from a few plants infected at setting time to many others. Later in the season a tractor-drawn duster was used which dragged over the top leaves, resulting in nearly complete infection. Ky. 52 (NN) on this farm was entirely free from mosaic injury, while Ky. 16 in some fields had nearly 100 percent infection by cutting time. Three mosaic-resistant (NN) dark tobacco varieties, Ky. 150 and Ky. 151 (dark fire-cured), and Ky. 160 (one-sucker) have been tested the past 2 years on several hundred acres in areas where mosaic has been a problem. Reports indicate complete freedom from mosaic, and satisfactory quality. These varieties are not root rot resistant.

Streak. This virus disease appears to have been on the increase in the northcentral part of the State during the past few years. Conclusive proof was obtained last spring that the virus overwinters in sweetclover plants. It was repeatedly transferred to burley tobacco from sweetclover collected in the early spring and transplanted to the greenhouse. As in the past, there appeared to be a definite relation between sweetclover plants and outbreaks of the disease. A few fields of tobacco were seen with nearly 100 percent infection, and in one field individual plants had as many as thirty primary lesions where the virus had evidently been introduced by some insect. Growers state that one form of loss from the disease results from breaking of the necrotic stalks when they are speared after cutting, making it difficult to get them to the barn. In some plants, affected late in the season, the stem streaks often extended into the base of the leaves, and the leaves drooped and hung down the stalk but did not wilt. Striking midvein and vein necrosis causing distortion and curling of sucker leaves was often seen in the suckers of topped plants which showed no other symptoms. In some of these suckers local infections were present on some of the leaves. The disease was observed in plant beds, in plants just commencing growth in the field, and new infections could be found throughout the summer. Dusting sweetclover with 5 percent D.D.T. several times during the summer appeared to reduce infection in nearby tobacco somewhat.

Early Blooming. Early blooming was quite common in tobacco fields over the State by July 1. Plants usually ranged in size from 8 to 15 inches tall, and the leaves were small. Usually several lower leaves were dead, the middle leaves yellow, and the upper leaves light green. Affected plants were usually in very infertile soils. Roots were restricted and sometimes grew upward as though aeration were poor. Heavy rains fell after setting, and the ground was usually closely compacted.

Frenching. Frenching was reported from two fields. In both instances the plants were high in nitrates and phosphates and very low in potash.

Clubroot. On September 6 specimens of tobacco were received from Kenton County affected by the disease previously reported as clubroot. As in the past, no nematodes were found in the enlarged roots. It is possible that it is caused by the tumor virus recently reported by Black (Amer. Jour. Bot. 32: 408-415, 1945).

Deficiency Diseases. Potash starvation, mild to severe, could be seen in some fields in most areas of the State on any field trip. Soils and plant tissue from these fields, when tested by the Purdue method, without exception have shown low to very low potash content.

Phosphorus starvation was observed in one field about 3 weeks after setting. The lower leaves of the slowly growing plant were pale green and had many circular, parchment-like spots 1/8 to 1/4 inch in diameter. Tests of the soil and plants showed that phosphorus was very low. About midseason the plants in this field started to grow, and a fair crop resulted.

Manganese Toxicity. In June 1945 burley tobacco plants with typical manganese toxicity symptoms, from an acid soil (pH 4.8), were received from County Agent McClure, of Daviess County. He stated that he had seen five fields of burley affected. Affected plants had a pale yellow, almost white appearance, especially prominent along and between the smaller veins. Numerous irregular to circular, 1-3 mm, brown, dead spots were present on all leaves except a few pale leaves in the growing point. The dwarfed plants had narrow, slightly distorted leaves. Two affected plants were set in greenhouse soil. After 10 days the new leaves developed without manganese toxicity symptoms. The plants gradually improved in appearance after this and grew to maturity without developing any further toxicity symptoms.

Burley seedlings were set in soil from the Daviess County field with and without additions of hydrated lime. Those receiving hydrated lime developed normally, whereas those receiving no lime developed typical manganese toxicity symptoms. Mr. McClure reported later that a side dressing of lime brought about recovery in the field.

KENTUCKY AGRICULTURAL EXPERIMENT STATION

SOUTHERN COOPERATIVE CORN DISEASE RESEARCH COMMITTEE REPORT FOR 1945

J. Harvey McLaughlin, Chairman

Uniform corn seed treatment tests were conducted in five southern States by five cooperators in 1945. A total of six plantings were made testing the efficiency of nine chemicals[1] on two different seed lots.

The seed lots wereGolden Queen, an open-pollinated variety supplied by S. A. Wingard of Virginia, and Hays Golden, an open-pollinated variety supplied by the Oklahoma Experiment Station. Viability of the seed was determined by counts of germinated seed after six days between

[1]Chemicals supplied through the courtesy of the manufacturers.

blotters in a seed germinator. Seed-borne fungi were determined by germinating seed in test tubes of water agar held at 26° C for 12 days. These data are presented in Table 1.

Table 1. Data on seed viability and seed-borne fungi of the seed lots used in the 1945 uniform corn seed treatment tests.

Source of seed	Variety	Treatment	Germination % strong	weak	total	Fmo	Fsp	Rni	Asp	Psp
Virginia	Golden	Nontreated	86	5	91	70	23	30	--	75
	Queen	Arasan	88	3	91	35	12	5	--	12
Oklahoma	Hays	Nontreated	95	2	97	60	30	100	38	58
	Golden	Arasan	94	4	98	23	12	18	25	12

Fmo - Fusarium moniliforme
Fsp - Fusarium species
Rni - Rhizopus nigricans
Asp - Aspergillus species
Psp - Penicillium species

Table 2. Climatic and soil conditions relative to the various plantings of the 1945 uniform corn seed treatment tests.

Location	Planting date	Soil conditions type	pH	moisture[1]	Temperatures[2] max.	min.	Rainfall[3]	Cooperator
Jacksonville, Texas	III-20-45	loamy fine sand	6.0	wet	23.0	12.6	3.70	P.A.Young
Fayetteville, Arkansas	V-3-45	silt loam	6.0	optimum	21.7	8.0	1.33	E.M.Cralley
Blacksburg Virginia	V-11-45	silty clay loam	7.1	optimum	23.1	7.2	1.54	S.A.Wingard
Blacksburg Virginia	VI-16-45	silty clay loam	7.1	optimum	28.7	13.3	.84	S.A.Wingard
Experiment Georgia	V-23-45	sandy clay loam	--	dry	30.0	17.4	2.31	G.A.Lebedeff
Stillwater Oklahoma	IV-5-45	sandy loam	6.0	optimum	21.7	8.8	1.89	J.H.McLaughlin

[1]Soil moisture at planting time.
[2]Mean temperatures, °C, for 12-day period following planting.
[3]Total precipitation during 12-day period following planting.

The seed was treated at the Oklahoma Station and distributed to the cooperators for planting. Arasan (50% tetramethyl thiuramdisulfide), Spergon (98% tetrachloropara-benzoquinone), U.S. Rubber 604, and Yellow cuprocide were used at the rate of one ounce per bushel of seed; Semesan Jr. (1% ethyl mercury phosphate), Barbak-C (8% mercuric phenyl

cyanamid), and Dubay 1451-D (1.25% ethyl mercury p-toluene sulfonanilide) were used at one and one-half ounces per bushel; and Dow 9A (25% zinc trichlorophenate) and Dow 9B (50% zinc trichlorophenate) were used at two ounces per bushel. A nontreated lot of seed was also included in the test.

All cooperators except P.A.Young of Jacksonville, Texas, used a split plot field design of five or more replications with varieties as main plots and treatments as subplots. One hundred seed of each treatment was planted per plot. The environmental conditions and other information relative to each of the plantings are given in Table 2.

The Jacksonville, Texas planting was heavily damaged by moles, so much so that the data are not presented in this report. In Oklahoma the soil remained cool and moist throughout April, giving excellent testing conditions. The Arkansas planting was damaged by birds; however, the data were adjusted on the basis of noninjured treatment means and presented in this report. Over two inches of rain fell on the Georgia planting four days after planting and resulted in considerable erosion and low seedling stands. The first planting in Virginia was followed by considerable rain and unusually cool weather; the second planting was followed by favorable climatic conditions for seed germination.

The mean seedling stand counts for each of the various plantings are presented in Table 3. It is noteworthy that significant increases resulted from treatments in each of the tests, particularly in the first Virginia planting and the Oklahoma planting. In each of these instances the soil was cool and moist following planting. Of the 80 possible comparisons between nontreated and treated means in the two seed lots, the treatment means were equal to or exceeded the nontreatment means in 75 (94%) comparisons. In the case of the combined mean totals for the five plantings the treatment means exceeded the nontreatment means in every instance. In Oklahoma seed lot 37.5% of the seedling stand increases were highly significant and 17.5% were significant; in the Virginia seed lot 27.5% were highly significant and 30.0% were significant; and in the combined totals for the two seed lots 42.5% were highly significant and 27.5% significant.

Yield data were obtained from the Oklahoma planting. The missing hills in the original planting were replanted but not harvested for yields, thus the yield data are for the original seedling stands. The yield data for the Spergon treatment were invalidated by irregularities in planting which did not, however, affect the seedling stands. These data are presented in Table 4.

Footnotes for Table 3, opposite:

[1]Least significant differences between treatments for test as a whole.
[2]Least significant differences between treatments within a seed lot.
[3]Data from Georgia not included.
[4]Percentage increases for various treatments over nontreatment.
*Significant at .05 level.
**Significant at .01 level.

Table 3. Mean seedling stand count data obtained from five corn seed treatment tests planted in four southern states in 1945.

	Blacksburg Virginia	Experiment Georgia	Fayetteville Ark.	Stillwater Okla.	Treatment Totals[3]	Increases[4] over Nontreated
Planting date	V-11	VI-16	V-23	V-3	IV-5	
Counting date	VI-11	VI-30	VI-11	V-28	V-5	
LSD for totals[1] .05	3.59	3.44	9.71	4.63	3.85	
.01	4.77				5.12	
LSD within seed lots[2] .05	5.08	4.87	13.73	6.55	5.45	
.01	6.74				7.24	
Oklahoma seed lot means:						
Arasan	88.2**	93.6		84.2*	88.4**	363.4	8.4
Spergon	88.6**	95.2	63.4	84.8*	87.4**	356.0	8.9
Semesan Jr.	87.4*	93.2	63.8	78.8	88.6**	348.0	6.4
Barbak-C	83.0	91.4	68.4*	81.6*	90.0**	346.0	5.8
USR 604	90.0**	94.4		82.4*	88.4**	355.2	8.6
Dow 9A	88.4**	92.2		77.4	85.0**	343.0	4.9
Dow 9B	89.4**	93.0		79.2	91.2**	352.8	7.9
Yellow Cuprocide	90.2**	91.4		79.6	80.8	342.0	4.6
Dubay 1451-D	88.4**	95.0	78.0*	80.6	90.0**	354.0	8.3
Nontreated	81.0	93.2	52.4	75.2	77.6	327.0	
Virginia seed lot means:						
Arasan	81.8**	88.4*		79.6	83.8**	333.6	10.3
Spergon	78.6	84.6*	62.6	82.2*	84.4**	329.8	9.1
Semesan Jr.	84.4**	87.0*	62.6	78.8	85.4**	335.6	10.9
Barbak-C	81.6**	88.0*	65.4	74.6	80.6	324.8	7.4
USR 604	80.0*	85.0*		75.0	80.2	320.2	5.9
Dow 9A	83.2**	82.6*		75.4	85.2**	326.4	7.9
Dow 9B	82.4**	80.4		78.8	83.2*	324.8	7.4
Yellow Cuprocide	82.8**	82.6*		74.0	79.2	318.6	5.4
Dubay 1451-D	82.4**	85.4*	62.8	76.6	82.6*	327.0	8.1
Nontreated	74.0	77.8	56.8	74.4	76.2	302.4	
Mean totals for combined seed lots						
Arasan	85.0**	91.0*		81.9*	86.1**	344.0	9.3
Spergon	83.6**	89.9*	63.0	83.5*	85.9**	342.9	9.0
Semesan Jr.	85.9**	90.1*	63.2	78.8	87.0**	341.8	8.6
Barbak-C	82.3**	89.7*	66.9*	78.1	85.3**	335.4	6.7
USR 604	85.0**	89.7*		78.7	84.3**	337.7	7.3
Dow 9A	85.8**	87.4		76.4	85.1**	334.7	6.4
Dow 9B	85.9**	86.7		79.0*	87.2**	338.8	7.7
Yellow Cuprocide	86.5**	87.0		76.8	80.0	330.3	5.0
Dubay 1451-D	85.4**	90.2*	70.4*	78.6	86.3**	340.5	8.2
Nontreated	77.5	85.5	54.6	74.8	76.9	314.7	

For footnotes see opposite page

Table 4. Mean yield data from the Oklahoma planting showing the percentage increases in yield resulting from the various treatments.

Seed lot and treatment	Mean seedling stand per plot	Mean yield per plot lbs.	Percentage increases for treatment over nontreatment: Seedling stand	Yield
Oklahoma seed				
Arasan	88.4**	38.9**	13.9	24.3
Semesan Jr.	88.6**	34.2	14.2	9.3
Barbak-C	90.0**	36.3*	16.0	16.0
USR 604	88.4**	38.9**	13.9	24.3
Dow 9A	85.0**	37.1*	9.5	18.5
Dow 9B	91.2**	38.0*	17.5	21.4
Yellow Cuprocide	80.8	36.4*	4.1	16.3
Dubay 1451-D	90.0**	35.6	16.0	13.7
Nontreated	77.6	31.3		
Virginia seed				
Arasan	83.8**	30.4	10.0	16.0
Semesan Jr.	85.4**	28.8	12.1	9.9
Barbak-C	80.6	26.5	5.8	1.1
USR 604	80.2	29.5	5.2	12.6
Dow 9A	85.2**	27.8	11.8	4.6
Dow 9B	83.2*	29.9	9.2	14.1
Yellow Cuprocide	79.2	26.5	3.9	1.1
Dubay 1451-D	82.6*	32.4*	8.4	23.7
Nontreated	76.2	26.2		
Combined seed lots:				
Arasan	86.1**	34.6**	12.0	20.1
Semesan Jr.	87.0**	31.5	13.1	9.4
Barbak-C	85.3**	31.4	10.9	9.0
USR 604	84.3**	35.9**	9.6	24.7
Dow 9A	85.1**	32.4*	10.7	12.5
Dow 9B	87.2**	33.9**	13.4	17.7
Yellow Cuprocide	80.0	31.4	4.0	9.0
Dubay 1451-D	86.3**	34.0**	12.2	18.1
Nontreated	76.9	28.8		

* Significant at .05 level.
* Significant at .01 level.

Table 5. Seedling stand increases resulting from treatments on different seed lots. Calculations based on total seedling stands per planting resulting from a respective treatment.

Characteristics of seed lot	Non-treated	Arasan	Spergon	Semesan Jr.	Barbak C[1]	Dubay 1451-D[2]	USR 604	Dow 9A	Dow 9B
1943 plantings:									
Total seedling stands of 8 plantings with seed lot of highest germination. (S.C.-Wood's Golden Dent-92% germ.)	2677	2987	3038	3033	2968	3050			
Percentage stand increase		11.6	13.5	13.3	10.9	13.9			
Total seedling stands of 8 plantings with seed lot of lowest germination. (Okla.-Hay's Golden-85% germ.)	2797	2954	2971	3055	2930	3031			
Percentage stand increase		5.6	6.2	9.2	4.8	8.4			
Total seedling stands of 8 plantings with seed lot containing approximately 10% cracked or broken seeds. (Va.-Golden Queen-86% germ.)	3075	3207	3095	3113	3035	3114			
Percentage stand increase		4.3	.7	1.2	-1.3	1.3			
1944 plantings:									
Total seedling stands of 14 plantings with seed lot of highest germination. (Va.-Golden Queen-96% germ.)	5633		5780	5749	5842	5737			
Percentage stand increase			2.6	2.1	3.7	1.9			
Total seedling stands of 14 plantings with seed lot of lowest germination. (Miss.-La. 463-74% germ.)	4697		5119	4957	5012	4999			
Percentage stand increase			9.0	5.5	6.7	6.4			
1945 plantings:									
Total seedling stands of 4 plantings with seed lot of highest germination. (Okla.-Hay's Golden-97% germ.)	1635	1772	1780	1740	1730	1770	1776	1715	1764
Percentage stand increase		8.4	8.9	6.4	5.8	8.3	8.6	4.9	7.9
Total seedling stands of 4 plantings with seed lot of lowest germination. (Va.-Golden Queen-91% germ.)	1512	1668	1649	1677	1624	1635	1601	1632	1624
Percentage stand increase		10.3	9.1	10.9	7.4	8.1	5.9	7.9	7.4

[1]Barbak-D used in 1943 (6% mercuric phenyl cyanamid).

[2]1452-F used in 1944 (7.7% ethyl mercury p-toluene sulfonanilide).

Summarization of Three Season's Data:

In 1943, corn seed treatment tests involving 8 seed lots and 7 chemicals were conducted[2]. Test A, comparing Semesan Jr. treatment with nontreatment on 8 seed lots, was planted in 13 locations by 9 cooperators; of the 111 comparisons, 82 (73.9%) showed stand increases associated with Semesan Jr. -- 21.95% were significant and 8.54% were highly significant. Test B, comparing Semesan Jr., Spergon, Arasan, Barbak-D, and Dubay 1451-D treatments with nontreatment on 5 seed lots, was planted in 9 locations by 8 cooperators; of the 255 resultant comparisons between treatments and nontreatment, 179 (70.2%) showed stand increases associated with the various treatments. Of these increases, 13.41% were significant and 7.26% were highly significant.

In the 1944 tests, planted in 9 locations by 7 cooperators, comparisons were made between Semesan Jr., Spergon, Barbak-C and Dubay 1452-F treatments and nontreatment on 5 seed lots[3]. A total of 280 comparisons between various treatments and nontreatment were possible, of which 198 (70.7%) showed stand increases associated with treatment; 13.13% were significant and 23.23% were highly significant.

In the 1945 tests, planted in 5 States by 5 cooperators, comparisons were made between Arasan, Spergon, Semesan Jr., Barbak-C, USR 604, Dow 9A, Dow 9B, Yellow Cuprocide, and Dubay 1451-D treatments and nontreatment on 2 seed lots. A total of 80 comparisons between treatments and nontreatment were possible, of which 75 (94%) showed stand increases associated with treatment; 23.8% were significant and 32.5% were highly significant.

Data obtained from isolation studies in South Carolina and Oklahoma in 1943 and 1944 indicated that fewer isolates of Fusarium moniliforme and other soil fungi were obtainable from the mesocotyl regions of seedlings produced from treated seed (especially with the volatile dusts) than in the case of seedlings produced from nontreated seed.

Regression studies of the mean air temperatures during a 2-week period following planting as related to the mean total seedling stands indicated that chemical seed treatment was effective throughout the temperature ranges encountered in 1943 and 1944 but that seedling emergence decreased as temperatures increased.

Yield data obtained by various cooperators indicated that there are no benefits from treatment when the planting is at an excessive rate with subsequent thinning to a desired stand. Seed treatment thus does not markedly increase the yield of individual plants. Yield data obtained from plantings made at definite rates with no thinning have shown significant increases from treatment as a result of improved stands.

Semesan Jr., Spergon, Arasan, Dubay 1452-F and Barbak-C applied at 1.0, 1.5, 2.0, and 2.5 oz. per bushel have shown no significant differences between rates, as reflected in either increased or decreased emergence. Clear-cut cases of injury due to over-dosage of the mercurials have not been observed.

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2 Plant Disease Reporter 28: 64-76, 1944.
3 Plant Disease Reporter Suppl. 153, 1945.

Significant seedling stand increases have resulted from treatment with various chemicals in Virginia, North Carolina, South Carolina, Georgia, Tennessee, Mississippi, Arkansas, and Oklahoma in 1 or more of the 3 years of uniform testing. In general Arasan and Spergon have appeared to be as effective as; and in many instances better than, the standard mercurials Semesan Jr. or Barbak-C. Inasmuch as Arasan and Spergon are relatively nontoxic and not as dangerous to use, they merit serious consideration as corn seed treatment chemicals. In addition, such chemicals as USR 604, Dow 9A and 9B, and Dubay 1451-D have appeared to have considerable merit and warrant further testing.

Presented in Table 5 are data showing the percentage increases in seedling stands resulting from different chemicals on different seed lots for the 3 seasons involved. In general seed treatment is most beneficial on the seed lots of lowest germination, although percentage germination alone is not sufficient evidence for a decision to treat or not to treat as is shown by the South Carolina seed lot in 1943.

Replanting is seldom a satisfactory method of overcoming poor seedling stands in most regions, and it is as time-consuming and more expensive to grow and care for a poor stand than it is for a good stand. Corn seed treatment has been shown to increase seedling stands 5 to 10 per cent generally and as much as 20 per cent or more under adverse conditions following planting. Corn seed treatment frequently may mean the difference between a satisfactory seedling stand and one that must be replanted or planted to a second crop. Based on a possible stand of 8,000 to 10,000 plants per acre, each 1 per cent increase in germination will give 80 to 100 more plants per acre. A 5 per cent increase is equivalent to 400 to 500 plants per acre; a 10 per cent increase, 800 to 1000 plants; and a 20 per cent increase, 1600 to 2000 plants per acre. Since the environmental conditions which will follow corn plantings cannot be too accurately forecast and seed treatment is very inexpensive, corn seed treatment should be a standard annual practice serving as a form of crop insurance. In this way better seedling stands will be assured every season regardless of the peculiarities of any particular season.

SOUTHERN COOPERATIVE CORN DISEASE RESEARCH COMMITTEE

BRIEF NOTES OF PLANT DISEASES AND A CORRECTION

INTERNAL CORK OF SWEETPOTATOES IN MISSISSIPPI: Internal cork of sweetpotatoes has occurred in experimental plantings of sweetpotatoes at Ellisville in Jones County, Mississippi, and has also been reported from the canning factory at Laurel and the dehydrating plant at Houston. --John T. Presley, Mississippi Agricultural Experiment Station, State College.

TOMATO LATE BLIGHT SEVERE IN VIRGINIA: The worst epiphytotic of late blight (Phytophthora infestans) observed in Virginia during the past twenty years occurred in the mountain counties of Southwest Virginia during the late summer of 1945. Late blight appeared widely distributed during August with the fungus sporulating profusely on the fruit and leaves. By the end of August very few home gardeners, or

commercial growers who did not apply a fungicide, had any tomatoes left. The unusually heavy rainfall followed by many cloudy days with high humidity and cool foggy nights during July and August were ideal for the development of late blight. Tomatoes located in damp places near streams or on the northern slopes of hills were damaged most severely.

In several demonstrations where the tomato plants were dusted at weekly intervals with a 5 percent copper dust, complete control of late blight was obtained. Late blight appears to be much easier to control by the application of fungicides than is early blight (Alternaria solani). --S. B. Fenne, Extension Plant Pathologist.

CRATER ROT OF CELERY IN MARYLAND: Crater rot of celery, a new aspect of soft rot caused by Erwinia carotovora, has been described by P. A. Ark (Phytopath. 35: 140-141) as occurring in California. Celery with symptoms typical of this disease were received by the Plant Pathology Laboratory of the University of Maryland from a grower near Cumberland, Maryland, on August 29, 1945. Specimens were forwarded to Dr. Ark, who diagnosed the condition as crater rot. This is the first time that this new aspect of soft rot of celery has been recognized in Maryland. --C. E. Cox. Maryland Agricultural Experiment Station.

CORRECTION -- AECIAL STAGE OF PUCCINIA RUBIGO-VERA: In the Triticum section of the Revised Check List of plant diseases (P.D.R. 29: 627), a reference was made to the collection of the aecial stage of Puccinia rubigo-vera in Wisconsin. Dr. K. Starr Chester has called attention to the fact that this collection was probably of a different form of leaf rust than the variety tritici. Correspondence with Dr. E. E. Honey, who made the collection, verifies Dr. Chester's conjecture that a different form is involved; he states, "because of the habitat and lack of relation of wheat fields - - -, he would not expect it to be form tritici". The original report of the collection (P.D.R. 29: 590) was inadvertently listed under the heading Winter Wheat. The statement in the Check List should therefore be deleted, and Arthur's comment (Manual of the Rusts in United States and Canada, p. 181) still holds: "No field collections of aecia on native species have yet been identified with the wheat rust, although undoubtedly such do occur". -- Freeman Weiss.

NOVEMBER WEATHER

(From United States Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending December 4, 1945).

Maps I and II show the departure of mean temperature from normal and the percentage of normal precipitation for November 1945. Map I indicates that the month was warmer than usual over the greater portion of the country, except slightly below normal in the Florida Peninsula, Nevada, north-central California and Washington and 2° to 6° below normal from central Montana to Wisconsin.

The plus anomalies ranged from 4° to 6° in the southern portion of the western Plains, Colorado, and Texas and in areas from southern Louisiana

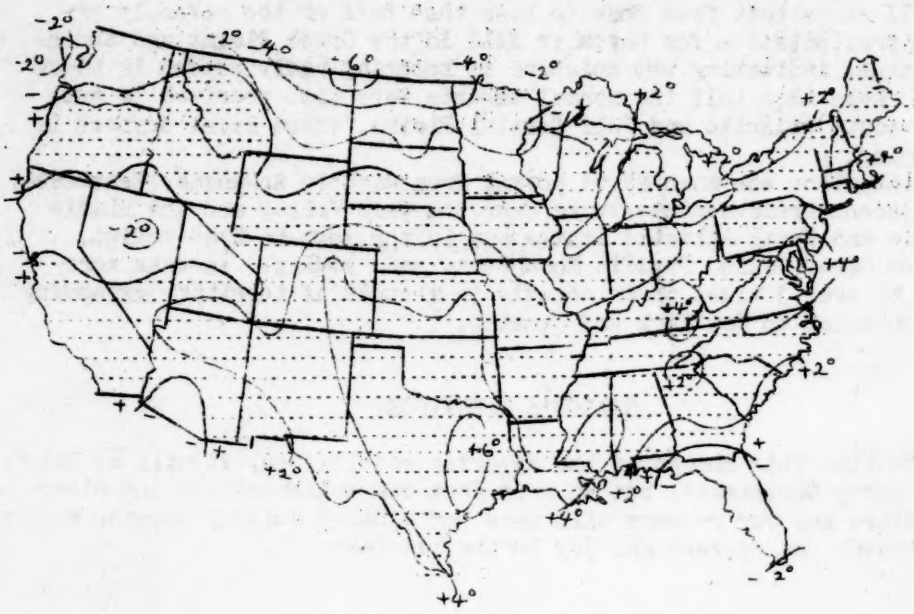
to the middle Atlantic coast.

Map II shows that from none to less than half of the normally expected precipitation for November fell in the Great Plains and Southwest; thus, indicating why moisture is becoming badly needed in these areas. Less than half the normal amounts were also received in much of the south Atlantic and Gulf Coastal Plains, where local dryness is developing.

Precipitation was much above normal from eastern Arkansas, Tennessee, and adjacent areas northeastward over the Ohio Valley and the Middle Atlantic and North Atlantic States and in the western Lake region, northern Great Basin, Pacific Northwest, and Wyoming. Amounts were from 2 to over 3 times their normals in a strip of territory extending from Tennessee to New York and Wyoming.

SEASON'S GREETINGS

By the time this number of the Reporter reaches you, it will be late for a "Merry Christmas", but we hope that our collaborators and other cooperators and our readers will have had a happy holiday season, and we wish each one success and joy in the New Year.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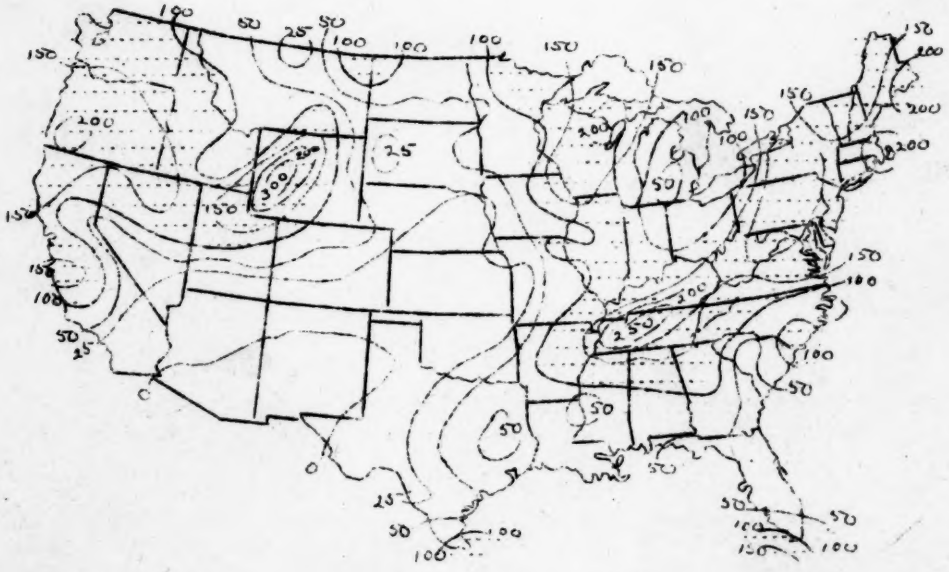
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